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11/01/2006

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EXAMINER

ADHAMI, MOHAMMAD SAJID

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                       |                                      |  |
|------------------------------|---------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/926,707  | <b>Applicant(s)</b><br>OHKUBO ET AL. |  |
|                              | <b>Examiner</b><br>Mohammad S. Adhami | <b>Art Unit</b><br>2616              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 18,21,23-25,27-31,33 and 37-58 is/are pending in the application.
- 4a) Of the above claim(s) 37-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18,21,23-25,27-31 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 37-58 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

- Applicant's Amendment filed 8/17/2006 is acknowledged
- Claims 18,21,27,28,29,33 and 38 have been amended.
- Claims 1-17,19-20,22,26,32,34-36 have been cancelled.
- Claims 18,21,23-25,27-31,33 and 37-58 are pending.
- Claims 37-58 are subject to restriction and will therefore not be examined.
- Applicant's remarks to respect to the 35 USC 112 1<sup>st</sup> paragraph rejection of claims 25 and 31 are noted and the rejection is respectfully withdrawn.

### ***Election/Restrictions***

1. Newly submitted claims 37-58 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The new claims 37-58 are directed toward obtaining correlation values and a distance between spreading codes, which are different from the original claims that are directed to retransmission requests based on the quality of the received signals.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 37-58 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Objections***

2. Claims 21 and 27 are objected to because of the following informalities: Claim 21 recites "storing at said mobile station stores said retransmission request signal". "Stores" should be removed. Claim 27 recites "said base station and said plurality of base stations." The second occurrence of "base stations" should be "mobile stations." Appropriate correction is required. For examination purposes, Examiner will assume the approve corrections.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 18,27, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya in view of Nokia Telecommunications (Nokia) (WO 99/01950).

**Re claims 18,27, and 33:**

Furuya discloses *a base station and a plurality of mobile stations* (Fig.1 ref.10 and 20B and 20C).

Furuya further discloses *receiving a retransmission request signal from a mobile station when a mobile station detects an error in a received multicast signal* (Col.2 lines 34-36 "each of the receive stations checks more than one

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received packets for error and sends back to the transmit station a repeat request signal”).

Furuya further discloses *retransmitting a multicast signal* (Col.2 lines 39-44 “the transmit station senses energy of each of the bursts of the signals sent from the receive stations and determines packets to retransmit).

Furuya does not explicitly disclose *determining directivity of an antenna by multiplying weights to separate an incoming wave from the remainder of waves from other mobile stations and increasing gain based on an obtained weight for the mobile station that sends the retransmission request and retransmitting a multicast signal by using said directivity.*

Nokia discloses *determining directivity of an antenna by multiplying weights to separate an incoming wave from the remainder of waves from other mobile stations and increasing gain based on an obtained weight for the mobile station that sends the retransmission request and retransmitting a multicast signal by using said directivity* (Pg.6 lines 28-34 “signals obtained from antenna elements are directed by multiplying the signal vector obtained from the antenna vector by complex coefficients, which are obtained from an analysis of the direction of arrival of the signal. Since the signal's direction of arrival changes slowly compared with changes in radio path fading, information obtained over a longer time can be used in the estimation of the direction of arrival, whereby the antenna beam can be directed more accurately” where directing the antenna

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more accurately causes an incoming wave to be separated and an increase in the gain).

Furuya and Nokia are analogous because they both pertain to communications between base stations and mobile stations.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Furuya as discussed above as taught by Nokia in order to alleviate the *sensitivity to noise or limit the number of antennas* used (Nokia Pg.6 lines 15-16).

2. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya in view of Nokie as applied to claim 18 above, and further in view of Schramm (US 6,208,663).

**Re claim 24:**

As discussed above, Furuya meets all the limitations of the parent claim.

Furuya does not explicitly disclose *a base station using a specific channel that is occupied for communication between a mobile station and the base station for sending a retransmission multicast request and a new multicast signal*.

Schramm discloses *a base station using a specific channel that is occupied for communication between a mobile station and the base station for sending a retransmission multicast request and a new multicast signal* (Col.5 lines 26-29 "Each BTS...includes a number of TRXs (not shown) that use the uplink and downlink RF channels" where the downlink channels are used to send a retransmitted signal or a new multicast signal).

Furuya and Schramm are analogous because they both pertain to retransmitting data sent with errors.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Furuya to include sending retransmissions and new signals over a specific channel as taught by Schramm in order to provide links for transmitting data to and from mobile stations (Schramm Col.5 lines 30-31).

3. Claims 21,23, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raitola in view of Furuya and further in view of Chuang (US 6,823,005).

**Re claims 21,28 and 29:**

Raitola discloses a *mobile station measuring receiving quality of a signal* (Col.3 lines 47-51 "the receiver measures the quality of a received transmission unit, and if the quality of the transmission unit is lower than the predetermined quality level required of a transmission unit, the receiver requests at least one retransmission").

Raitola further discloses *comparing the received quality to a predetermined value when the mobile station detects an error* (Col.3 lines 47-51 "the receiver measures the quality of a received transmission unit, and if the quality of the transmission unit is lower than the predetermined quality level required of a transmission unit, the receiver requests at least one retransmission" and Col.8 lines 48-51 detecting an error where the quality is compared when the mobile detects an error).

Raitola further discloses *the mobile station detecting an error and sending a retransmission request signal* (Col.8 lines 49-51 *If there were errors in the packet, retransmission of the transmission units of the poorest quality are ordered*).

Raitola further discloses *storing the retransmission request* (Col.6 lines 15-17 "The originally transmitted transmission unit and retransmitted units as well as their autocorrelation values are stored in memory" where the storing the autocorrelation value is similar to storing a retransmission request because the retransmission request can be determined by the autocorrelation value).

Raitola further discloses *a base station retransmitting a signal corresponding to the retransmission request signal when the base station receives the retransmission request a signal from the mobile station* (Col.13 lines 52 and 53 "the transmitter retransmits the requested transmission units to the receiver").

Raitola does not explicitly disclose *using a multicast signal*.

Furuya discloses *using a multicast signal* (Abstract "a single transmit station transmits the same message to a plurality of receive stations" where the message is a multicast signal).

Raitola and Furuya are analogous because they both pertain to communications and retransmission.



It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Raitola as discussed above as taught by Furuya in order to transmit information to multiple receivers at the same time.

Raitola does not explicitly disclose *transmitting a retransmission request when a receiving quality is better than a predetermined value and storing the retransmission request when the receiving quality is not better than a threshold*.

Chuang discloses *transmitting a retransmission request when a receiving quality is better than a predetermined value and storing the retransmission request when the receiving quality is not better than a threshold* (Figure 7 where if the SIR ("receiving quality") is better than the threshold, there is transmission as seen at time 720 and when it is below the threshold there is no transmission as seen at time 730. Additionally, once the SIR goes above a threshold, the transmission continues again as seen at time 730).

Raitola, Furuya and Chuang are analogous because they all pertain to retransmitting data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Raitola as discussed above as taught by Chuang "in order to maximize throughput" (Chuang Col.3 lines 24-25).

**Re claims 23 and 30:**

Raitola discloses *receiving quality being receiving power of a received signal, a ratio (CIR) between received signal and interference power, an error rate of bit, packet or slot of a received signal, or a correction bit number or*

*likelihood obtained when decoding error correction code (Col.9 lines 16-19 "The quality of a transmission unit is typically determined by measuring the signal-to-noise ratio of the transmission unit, and the quality of a packet is determined by checking the CRC of the packet").*

4. Claims 25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm in view of Boivie (US 6,625,773) and Seddigh (US 7,035,214).

**Re claims 25 and 31:**

Schramm discloses *a mobile station sending a retransmission request signal to a base station when a mobile station detects an error in a signal (Col.3 lines 5-7 "ARQ techniques involve analyzing received blocks of data for errors and requesting retransmission of blocks which contain any error").*

Schramm further discloses *a base station monitoring a receiving state of the signal in the mobile stations, and changing a transmission method to conform to a receiving state according to a result of monitoring, and sending a signal (Col.4 lines 12-15 "When a request for retransmission is received, e.g., at a base station in a radiocommunication system, the FEC coding and/or the modulation which was originally used to transmit the block can be changed" where on Pg.6 lines 34 and 35 of the specifications, monitoring the receiving state is described as receiving the retransmission request signal, "The receiving state can be monitored by receiving the retransmission request signal").*

Schramm does not explicitly disclose *using a multicast signal and the mobile station not performing error detection for a multicast signal which includes*

*the same information and is further retransmitted after receiving the multicast signal without any errors.*

Boivie discloses *using a multicast signal* (Col.1 line 31 "IP packets can be transmitted as unicasts or multicasts").

Boivie further discloses *the mobile station not performing error detection for a multicast signal which includes the same information and is further retransmitted after receiving the multicast signal without any errors* (Col.7 lines 18-21 "When the sender needs to re-transmit a packet, it uses a multicast for the re-transmission. Since the sender knows the receivers that it needs to re-send to, it can re-send to just those receivers." where the mobile station does not perform error detection on further retransmissions of the multicast signal that contains the same information as the multicast signal received without any errors because it does not receive the further retransmissions).

Schramm and Boivie are analogous because they both pertain to retransmitting data that is received with errors.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Schramm to include using a multicast signal and not performing error detection at a mobile station for a retransmitted signal as taught by Boivie in order to optimize the retransmissions and not waste bandwidth on retransmitting information to nodes that have already successfully receive that information (Boivie Col.7 lines 21-24).

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Schramm does not explicitly disclose *a mobile station not sending a signal when a signal is received without detecting any errors*.

Seddigh discloses *a mobile station not sending a signal when a signal is received without detecting any errors* (Col.5 lines 56-58 "However when packets 1 through 3 are received correct and intact at B no acknowledgment is returned to A").

Schramm and Seddigh are analogous because they both pertain to retransmitting data that is not received correctly.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Schramm to include not transmitting a signal when the data is received correctly as taught by Seddigh in order to reduce the acknowledgment traffic (Seddigh Col.5 line 44).

### ***Response to Arguments***

5. Applicant's arguments filed 8/17/2006 have been fully considered but they are not persuasive.

#### **Re claims 18,27 and 33:**

In the remarks on pg.19-20, Applicant contends that Nokia does not disclose determining directivity of a base station antenna by multiplying weights to separate an incoming wave from waves of a remainder of the plurality of mobile stations.

The Examiner respectfully disagrees. The cited portions of Nokia disclose multiplying weights to separate an incoming wave (Nokia pg.6 lines 30-34). Changing the directivity of the antenna separates an incoming wave from other waves because the changed directivity is towards the incoming wave.

**Re claims 25 and 31:**

In the remarks on pg.22, Applicant contends that none of the applied references disclose if the mobile station receives a retransmitted multicast signal without an error, the mobile station does not perform error detection for a multicast signal which includes the same information as the retransmitted multicast signal and which is further retransmitted after receiving the retransmitted multicast signal.

The Examiner respectfully disagrees. As cited in the above office action, Boivie reads on the claimed limitation. As disclosed in Boivie, the mobile station does not perform error detection on further retransmission of the multicast signal that contains the same information as the multicast signal received without any errors because it does not receive the further retransmissions.

In the remarks on pg.22, Applicant contends that none of the applied references includes logic for discerning whether a retransmitted multicast packet is a packet that was previously received without error.

The Examiner respectfully disagrees. The stated differences in the applied references and applicant's invention are not reflected in the claims.

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**Re claims 37-58:**

In the remarks on pg.18, Applicant traverses the restriction of claims 37-58.

The Examiner respectfully disagrees. 37 CFR 1.142(a) states "that restriction is proper at any stage of prosecution up to final action."

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

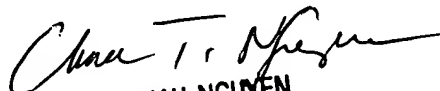
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad S. Adhami whose telephone number is (571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSA 10/27/2006

  
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